

What is claimed is:

1 1. A plasma display panel, comprising:
2 a phosphor layer between a pair of opposing substrates;
3 said phosphor layer emitting light through excitation by vacuum ultraviolet
4 radiation;
5 said phosphor layer containing spherical fine particles of a luminescent material
6 that is excited by vacuum ultraviolet radiation (VUV).

1 2. A plasma display panel as described in Claim 1, wherein:
2 said VUV-excited luminescent material is fine particles of a perfect sphere-shape.

1 3. A plasma display panel described in Claim 2, wherein:
2 said VUV-excited luminescent material has a particle size of 2 micrometers or
3 less.

1 4. A plasma display panel described in Claim 2 or 3, wherein:
2 said VUV-excited luminescent material is a BAM-type luminescent material
3 represented by $\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}$.

1 5. A process for producing a plasma display panel having a phosphor layer which
2 is placed between a pair of opposing substrates and which contains a VUV-excited
3 luminescent material which emits light through excitation by vacuum ultraviolet radiation,
4 comprising:

5 a reaction step in which a metal ion solution of VUV-excited luminescent material
6 is atomized and formed into spherical fine particles under a heated atmosphere of 500-
7 1500 degrees C;

8 a baking step in which said spherical particles formed in said reaction step are
9 heated to a temperature greater than in said reaction step.

1 6. A process for producing a plasma display panel as described in Claim 5,
2 wherein:
3 said heating temperature of said baking step is 1000-1700 degrees C.

1 7. A process for producing a plasma display panel as described in Claim 5 or 6,
2 wherein:
3 said baking step is conducted in an atmosphere of oxygen concentration of 0.02
4 ppm or less and water concentration of 0.5 ppm or less.

1 8. A process for producing a plasma display panel as described in Claims 5, 6 or 7,
2 wherein:
3 in said reaction step, a fluxing agent or thickener is further added to said metal ion
4 solution.

1 9. A process for producing a plasma display panel as described in Claim 8,
2 wherein:
3 NH₄BF₄ is added as said fluxing agent.

1 10. A VUV-excited luminescent material, comprising:
2 VUV-excited luminescent material which emits light through excitation by
3 vacuum ultraviolet radiation;
4 said VUV-excited luminescent material being fine particles of perfectly spherical
5 shape.

1 11. A process for producing VUV-excited luminescent material as described in
2 Claim 10, comprising:
3 a reaction step in which a metal ion solution containing a matrix substance and an
4 activator which constructs said VUV-excited luminescent material is atomized and
5 formed into spherical fine particles under a heated atmosphere of 500-1500 degrees C;
6 a baking step in which said spherical particles formed in said reaction step are
7 heated to a temperature greater than said reaction step.